

- wherein said top portion of said ring is coupled to said bottom portion of said ring when said male threads are securely engaged with said female threads.
- 7.** An apparatus as recited in claim 3, further comprising:
a first continuous recess in said top portion of said ring;
a second continuous recess in said bottom portion of said ring;
wherein said first continuous recess of said top portion is adapted to align with said second continuous recess of said bottom portion of said ring;
a counter ring adapted to align with said first continuous recess in said top portion and said second continuous recess in said bottom portion;
wherein said counter ring is further adapted to fit securely between said first and second continuous recesses when said top and bottom portions are coupled;
said counter ring made of shape memory alloy;
said counter ring having a first outer perimeter;
said counter ring having a reversibly changed second outer perimeter;
wherein said counter ring reversibly changes from said first outer perimeter to said second outer perimeter when said ring adjusts between said second and said first inner perimeter in response to a change of temperature applied to said ring; and
wherein said ring reversibly changes from said first inner perimeter to said second inner perimeter when said counter ring adjusts between said second and said first outer perimeter in response to a change of temperature applied to said counter ring.
- 8.** An apparatus as recited in claim 7:
wherein said first continuous recess in said top portion is configured in a first shape;
wherein said second continuous recess in said bottom portion is configured in said first shape;
said first outer perimeter of said counter ring is configured in said first shape; and
wherein said first shape is selected from the group consisting essentially of a circle, an oval and a polygon.
- 9.** An apparatus as recited in claim 7:
wherein said counter ring is electrically isolated from said ring;
wherein temperature of said ring changes in response to electric current applied to said ring; and
wherein temperature of said counter ring changes in response to electric current applied to said counter ring.
- 10.** An apparatus as recited in claim 7, wherein said ring is configured to be a prime mover of a reversible radial actuator.
- 11.** An apparatus as recited in claim 1, wherein said means for securing a thin film comprises:
a top surface and a bottom surface in said ring;
wherein said second inner perimeter of said ring is adapted to hold a removable wax disc;
- wherein said removable wax disc has at least a top surface;
wherein said removable wax disc is temporarily positioned in said second inner perimeter of said ring; and
wherein said top surface of said ring and said top surface of said removable wax disc are adapted to receive a thin film.
- 12.** An apparatus as recited in claim 1, further comprising:
a counter ring of shape memory alloy coupled to said ring;
said counter ring having a first outer perimeter;
said first outer perimeter of said counter ring adapted to align with said second inner perimeter of said ring;
wherein said counter ring has a reversibly changed second outer perimeter;
wherein said second outer perimeter of said counter ring is adapted to align with said first inner perimeter of said ring;
wherein said counter ring reversibly changes between said first outer perimeter and said second outer perimeter in response to said ring changing between said second and said first inner perimeter in response to changing the temperature of said ring; and
wherein said ring reversibly changes between said first inner perimeter and said second inner perimeter in response to said counter ring changing between said second and said first outer perimeter in response to changing the temperature of said counter ring.
- 13.** An apparatus as recited in claim 12:
wherein said counter ring is electrically isolated from said ring;
wherein temperature of said ring changes in response to electric current applied to said ring; and
wherein a change in temperature of said counter ring changes in response to electric current applied to said counter ring.
- 14.** An apparatus as recited in claim 12, wherein:
said second inner perimeter of said ring is configured in a first shape; and
wherein said first shape is selected from the group consisting essentially of a circle, an oval and a polygon.
- 15.** An apparatus as recited in claim 1, wherein said device is adapted to be positioned in a specimen holder of a transmission electron microscope.
- 16.** An apparatus as recited in claim 1:
wherein said thin film is supported on a substrate; and
wherein said substrate is coupled to said ring.
- 17.** An apparatus as recited in claim 1, wherein said first inner perimeter of said ring is up to about five percent larger than said second inner perimeter of said ring.
- 18.** An apparatus as recited in claim 1, wherein said ring is adapted to be reversibly changed from said first inner perimeter to said second inner perimeter at about room temperature.
- 19.** An apparatus as recited in claim 1, wherein the temperature of said ring is changed by applying electric current to said ring.